

REMARKS

This paper is responsive to the Office Action mailed June 1, 2007 ("Office Action"). Applicant requests reconsideration and withdrawal of the rejections of Claims 1-48 for at least the reasons discussed below.

Independent Claims 1, 20 and 25 are patentable

Independent Claims 1, 20 and 25 stand rejected as allegedly unpatentable over U.S. Patent No. 6,819,576 to Johnson, Jr. ("Johnson") in combination with U.S. Patent No. 6,118,676 to Divan et al. ("Divan"). Office Action, p. 2. The Office Action concedes that Johnson "does not disclose the utilization of the technique for a pre-charge circuit, a boost converter." Office Action, p. 2. The Office Action asserts that Divan "teaches the utilization of the similar technique for a pre-charge (column 11, line 60-70+), a boost converter (column 5, lines 10-50)" and that "[i]t would have been obvious . . . to modify Johnson, Jr.'s uninterruptible power supply circuit by utilizing the technique taught by Divan et al. for the purpose of dynamic voltage sag corrector." Office Action, pp. 2 and 3. Applicant respectfully disagrees.

Regarding Claim 1, the Office Action appears to allege that Divan teaches "a precharge circuit coupled to the DC link and operative to charge a first capacitance between the first DC bus and the reference bus and to transfer charge from the charged first capacitance to a second capacitance between the second DC bus and the reference bus." The cited passage at column 11, lines 60-70 of Divan, referring to FIG. 2, states:

A charging resistor 56 is preferably connected between the storage capacitors 40 and 41 and the AC bus line 34. As will be described in more detail below, the charging resistor 56 is provided to ensure soft charging of the storage capacitors 40 and 41 from the input voltage signal provided on the AC bus line 34 at start-up of the voltage sag corrector 20. An input relay 58 is preferably connected in parallel across the charging resistor 56. The input relay 58 may be implemented in a conventional manner. As will be discussed in more detail below, the input relay 58 is provided to bypass the charging resistor 56 once the storage capacitors 40 and 41 have been initially charged.

Divan further states, however:

The input relay 58 is preferably open upon initially powering up the dynamic voltage sag corrector 20. *The storage capacitors 40 and 41 in the*

regulator/storage module 28 are thus soft charged through the charging resistor 56 from the line signal provided on input terminals 30 and 31 during initial power up. During a positive half cycle of the input voltage waveform, the storage capacitor 41 is charged by current flowing from the input terminal 30, through the resistor 56, into the capacitor 41, through rectifier 39, and back to input terminal 31. During a negative half cycle of the input voltage waveform, the other storage capacitor 40 is charged by current flowing from input terminal 31, through rectifier 38, into capacitor 40, through resistor 56, and back to input terminal 30. The charging resistor 56 prevents a rapid inrush of current to the capacitors 40 and 41 at system startup, when the capacitors 40 and 41 are likely to be completely discharged. After a short delay, e.g., two seconds from system startup, the system controller 60 provides a control signal to the relay driver circuit 78 which, in turn, generates a relay drive signal to close the input relay 58, to bypass the charging resistor 56, thereby directly connecting the input terminal 30 to the storage capacitors 40 and 41.

Divan, column 13, lines 27-49 (emphasis added).

Thus, Divan describes a precharging process that involves independently charging capacitors 40 and 41 from the AC lines 34, 35 on successive positive and negative half cycles of the AC input voltage, without describing any charge transfer between the capacitors 40, 41 analogous to that recited in Claim 1, i.e., the circuit described in Divan is not operative to "charge a first capacitance between the first DC bus and the reference bus *and to transfer charge from the charged first capacitance to a second capacitance between the second DC bus and the reference bus,*" as recited in Claim 1. As these recitations are neither disclosed nor suggested by Johnson, the combination of Johnson and Divan does not disclose or suggest the recitations of independent Claim 1. For at least these reasons, Applicant submits that independent Claim 1 is patentable. At least similar reasons support the patentability of independent Claims 20 and 25.

Independent Claim 19 is patentable

Independent Claim 19 stands rejected as allegedly unpatentable over a combination of Johnson, Divan and U.S. Patent No. 6,222,352 to Lenk. Office Action, p. 3. In particular, the Office Action alleges that Johnson and Divan "discloses claimed subject matters as explained in the claims 1-13, 20 and 25 and 26-39, above, except the utilization of the technique for an inductor, a buck converter,"

and that Lenk "teaches the utilization of the technique for an inductor and buck converter (figure 1 and Abstract, line 1-5)." Office Action, p. 3. The Office Action alleges that "[i]t would have been obvious . . . to modify Johnson, Jr. in combination with Divan et al.'s power supply . . . for the purpose of providing a mechanism for controlling voltage excursions on intermediate DC busses and also improve the power factor of the power supply." Office Action, p. 3.

Applicant respectfully submits that these grounds are erroneous for several reasons. As an initial matter, Claims 1-13, 20, 25 and 26-39 include a variety of different recitations, and the Office Action fails to provide any specific indication as to how "as explained in the claims 1-13, 20 and 25 and 26-39" Johnson and Divan are being applied to Claim 19. The discussion of paragraph 3 of the Office Action refers to a "boost converter (column 5, line 10-50)" of Divan, but this passage does not describe "a boost converter circuit coupled to the DC bus and operative to commence generating a DC voltage on the DC bus from an AC source and/or a DC source after the buck converter circuit precharges the DC bus," as recited in Claim 19. Rather, this passage refers to boosting of an *AC* output voltage by action of a controllable inverter, i.e., this device does not "generate a DC voltage on the DC bus" as recited in Claim 19. Thus, the cited combination of Johnson and Divan does not provide the teachings alleged in the Office Action with respect to Claim 19.

In addition, the Office Action fails to provide a reasoned basis for combining Lenk with Johnson and Divan in the manner proposed in the Office Action. Lenk merely describes a buck converter. In particular, the Office Action provides no reasoning or citation from prior art as to how or why adding the buck converter shown in Lenk would provide "a mechanism for controlling voltage excursions on intermediate DC busses and also improve the power factor of the power supply."

Accordingly, Applicant submits that the cited combination of Johnson, Divan and Lenk does not teach the recitations of independent Claim 19, and that there is inadequate evidence of a motivation to combine these references to produce the recitations of independent Claim 19. For at least these reasons, Applicant submits that independent Claim 19 is patentable.

Independent Claim 40 is patentable

The basis provided for the rejection of independent Claim 40 is unclear, as the Office Action only vaguely refers to "the previous rejections based on the apparatus." Office Action, p. 4. Assuming that this is a reference to the rejection of independent Claim 1, Applicant submits that independent Claim 40 is patentable for at least the reasons discussed above with reference to the rejection of Claim 1.

The dependent claims are patentable

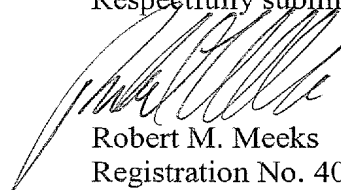
Applicant submits that dependent Claims 2-18, 21-24, 26-39 and 40-48 are patentable at least by virtue of the patentability of the respective ones of independent Claims 1, 20, 25 and 40 from which they depend. Applicant further submits that several of these dependent claims are separately patentable.

Applicant notes, however, that the Office Action fails to provide any specific argumentation to support the generalized allegations that the cited references teach the recitations of the dependent claims. In particular, the Office Action cites a few terms, e.g., "boost converter," "buck converter," but fails to provide any specific indication as to how uses of these items as described in the cited references allegedly apply to the dependent claims. In addition, the Office Action is silent regarding several other recitations in the dependent claims. Accordingly, Applicant defers further discussion of reasons for patentability of the dependent claims until such time that more specific bases for the rejections of these claims are provided.

Conclusion

As all of the claims are in condition for allowance, Applicant respectfully requests allowance of the claims and passing of the application to issue in due course. Applicant urges the Examiner to contact Applicant's undersigned representative at (919) 854-1400 to resolve any remaining formal issues.

Respectfully submitted,



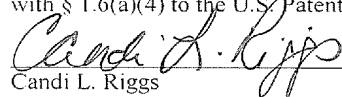
Robert M. Meeks
Registration No. 40,723

In re: Esa Paatero
Serial No.: 10/808,007
Filed: March 24, 2004
Page 15 of 15

Customer Number 20792
Myers Bigel Sibley & Sajovec, P.A.
P.O. Box 37428
Raleigh, NC 27627
919-854-1400
919-854-1401 (Fax)

CERTIFICATION OF TRANSMISSION

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4) to the U.S. Patent and Trademark Office on August 3, 2007.


Candi L. Riggs